

I claim:

1. An instrument comprising:
  - (a) a needle having a lumen;
  - (b) a mass flow rate sensor in sealed fluid communication with the lumen defined by the needle; and
  - (c) a vacuum pump which is in fluid communication with the lumen defined by the needle for evacuating gas from a hermetically sealed packaging, and in fluid communication with the mass flow rate sensor for directing mass flow from the evacuated packaging into operable contact with the mass flow rate sensor so as to permit sensing of any continuing mass flow from the evacuated packaging.
2. An instrument comprising:
  - (a) a needle having a lumen;
  - (b) an oxygen sensor in sealed fluid communication with the lumen defined by the needle;
  - (c) a mass flow rate sensor in sealed fluid communication with the lumen defined by the needle; and
  - (d) a vacuum pump which is (i) in fluid communication with the lumen defined by the needle for (A) pumping a sample of a gas from within a hermetically sealed packaging through the lumen of the needle and into operable contact with the oxygen sensor for permitting sensing of an oxygen concentration of the sample, and (B) evacuating the gaseous content of the hermetically sealed packaging, and (ii) in fluid communication with the mass flow rate sensor for directing mass flow from the evacuated packaging into operable contact with the mass flow rate sensor so as to permit sensing of any continuing mass flow from the evacuated packaging.
3. A method comprising the steps of:
  - (a) selecting a hermetically sealed packaging;
  - (b) puncturing the hermetically sealed packaging with a hollow needle having a lumen;

- (c) evacuating any gaseous content from within the hermetically sealed packaging through the lumen of the needle to form a vacuum within the hermetically sealed packaging; and
  - (d) measuring mass flow rate from within the evacuated hermetically sealed packaging, whereby a mass flow rate from the evacuated hermetically sealed packaging above a threshold value indicates a leak in the hermetically sealed packaging.
4. A method comprising the steps of:
- (a) selecting a hermetically sealed packaging;
  - (b) puncturing the hermetically sealed packaging with a hollow needle having a lumen;
  - (c) pumping a sample of the gas within the hermetically sealed packaging through the lumen of the needle and into operable contact with an oxygen sensor for sensing the oxygen concentration in the sample;
  - (d) evacuating the gaseous content from within the hermetically sealed packaging through the lumen of the needle to form a vacuum within the hermetically sealed packaging; and
  - (e) measuring mass flow rate from the evacuated hermetically sealed packaging, whereby a mass flow rate from the evacuated hermetically sealed packaging above a threshold value indicates a leak in the hermetically sealed packaging.